MEAT AND CARCASS QUALITY OF ROMOSINUANO CREOLE CATTLE CROSSED BY BRAHMAN COMING FROM A PRODUCTIVE SYSTEM OF SINÚ VALLEY, CARIBBEAN REGION, COLOMBIA.

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I. INTRODUCTION

One of the priority goals of the Colombian government's policy is to promote beef cattle ranching under sustainable agrosilvopastoral systems. Since 2013, the Colombian Corporation of Agricultural Research (Agrosavia), Turipaná research center (RC), has been working in a productive model for the Caribbean region [1], This model is based on free agrochemical forages, low tropic conditions, hot weather, high humidity, and dry season. The model also promotes the use of creole animals and their crosses, that are well adapted to that environment. In this sense, Turipaná RC has the nation´s germplasm bank of the *Bos taurus* Romosinuano breed. Most of the meat quality studies on this creole breed has been made outside of Colombia. The aim of this study was to characterize the carcass and meat quality of crossbreed Romosinuano by commercial Brahman fattened at Sinú Valley in a productive model for Caribbean region of Colombia.

II. MATERIALS AND METHODS

Ten grass-fed crossbreed males of 19m of age (aprox), 419.1± 16.4kg, were fattened at Turipaná RC until slaughter (525±28,9kg). Animals were in a paddock (rotational system) with different bushes and trees, and grazing *Megathyrsus maximus* cv Sabanera by 149 days at a stocking rate of 4 animals/he. During dry season, the animals were supplemented under grazing conditions with local products: a mixture of corn bran (*Zea Mays*) (65%), Cotton cake (*Gosypium sp*) (25%), and Molasses (*Saccharum officinarum*) (10%), and the amount to supplement consisted of 0.4% of live weight, by 18 weeks. The animals received mineralized salt and water ad libitum during all the fattening process. Animals were slaughter at INVIMA authorized commercial abattoir. Carcass weight (hot and cold, HCW and CCW, respectively), yield (%), backfat thickness (mm) and pH24h were evaluated on the carcass. Four commercial cuts (Tenderloin, Striploin, Rump Cup, Rost Biff) with 10d of ageing were evaluated in terms of nutritional and instrumental values: humidity, total ash, crude fat, crude protein; instrumental color, Warner-Bratzler shear force of cooked meat and cooking losses. To determine histologically the length of the sarcomere [2], samples of 1.5 x 1x 0.5cm (length x width x thickness) were removed from the cuts without ageing (24 h after slaughter). Descriptive statistic was carried out in which the average, minimum and maximum value are shown. Meat cuts was compared between them. The effect of the type of cut (muscle) was carried out by ANOVA using the method of least squares under a completely randomized design. For significant effects, Tukey's multiple comparison test was used. In the case of the variables evaluated in the sensory tests, the non-parametric Friedman rank test was used and the comparison between cuts was made based on the median and the number of samples with scores above or below said reference. Data were analyzed using the SAS Enterprise 8.3 program at a significance level of 5%.

III. RESULTS AND DISCUSSION

Related to carcass trait the HCW, CCW, yield (hot and cold%), backfat thickness (mm), pH24h and temperature were 283.17±22.4kg (259.2- 326.8kg), 281.24±22.4kg (258- 325.1kg), 53.89±1.7% (51-57.4%), 53.52±1.7% (50.8- 57.1), 4.8±1.6mm (1- 6mm), 5.69±0.2 (5.1- 5.9), and 4.72±0.8°C (3.9-

5.8°C) respectively. Compared with national indicators for bovine males (DANE, 2023), the CCW of animals coming from this model were 26.6kg higher; however, the cold yield was 0.52 percent point lower. It is important to highlight that these creole crosses were slaughter younger (aprox. 24month) than the average age to slaughter in Colombia (40 month), which helps to reduce the meat production cycle. Most of the beef cattle in Colombia have an *indicus* origin, which have a larger biotype and later maturation than this creole *bos taurus.*

Table 1 – Histological, nutritional and instrumental characterization of 4 cuts of meat from Romosinuano cattle beef crossed with commercial Brahman.

	Tenderloin (*Psoas maior*)	Striploin (*Longissimus thoracis*)	Rump cup (*Gluteus biceps*)	Rost Biff (*Gluteus medius*)
Sarcomere length*	3.32a ±0.09	1.90b ±0.09	1.80b ±0.09	1.71b±0.09
Crude protein (g/100g)	21.29±0.26	22.05±0.32	22.04±0.44	22.51±0.55
Crude fat (g/100g)	2.02±0.31	1.66±0.25	2.04±0.1	1.54±0.16
Moisture (%)	75.43a±0.37	75.21b±0.34	74.98b±0.35	74.1b±0.39
Total ash	1.11ab±0.03	1.03b±0.02	1.18a±0.05	1.17a±0.04
Cooking losses (%)	.32±0.01	.31±0.01	.32±0.0	.28±0.01
Shear force (KgF)	3.8±0.1	3.96±0.21	3.83±0.33	4.24±0.13
pH	5.75±0.05	5.66±0.04	5.61±0.03	5.71±0.12

*Without ageing. Different letter means statistical differences between cuts (p≤0.05)

Meat quality traits for four Romosinuano beef cuts are showed in table 1. There were no significant differences in most of meat quality parameters, and in general those values are within the normal range for beef. It is important to highlight the significant differences (p≤0.05) in sarcomere length and moisture, where tenderloin obtained the higher values. Although, there were no significant differences en shear force between cuts, the values found are quite interesting. On the other hand, these cuts show a lower level of fat, something that may be characteristic of Romosinuano meat.

IV. CONCLUSION

The implementation of a productive model plus the use of the Creole breed or its crosses, can contribute significantly to meat production in the Caribbean region of Colombia, from the point of view of reducing the productive cycle, as well as in its contribution to the quality of meat associated with taurus breeds.

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